

Thank you for purchasing a Sealey product. Manufactured to a high standard this product will, if used according to these instructions and properly maintained, give you years of trouble free performance.

**⚠ IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY. NOTE THE SAFE OPERATIONAL REQUIREMENTS, WARNINGS & CAUTIONS. USE THE PRODUCT CORRECTLY AND WITH CARE FOR THE PURPOSE FOR WHICH IT IS INTENDED. FAILURE TO DO SO MAY CAUSE DAMAGE AND/OR PERSONAL INJURY, AND WILL INVALIDATE THE WARRANTY. PLEASE KEEP INSTRUCTIONS SAFE FOR FUTURE USE.**

**Only fully trained and qualified persons should use this equipment. These instructions are not a substitute for user receiving full supervised training by a qualified person. It is important the user understands the products applications, limitations, and potential hazards.**

## 1. SAFETY INSTRUCTIONS

- WARNING!** This product should not be used without a safety cable. In the event of the puller/clamp becoming detached from the vehicle bodywork when under tension a safety cable will minimise the risk of serious injury.
- WARNING!** *Ensure health & safety, local authority, and general workshop practice regulations are adhered to when using this equipment.*
- ✓ Familiarise yourself with product application and limitations, as well as the specific potential hazards peculiar to the straightener.
- WARNING! No part of this unit or any accessory relating to the straightener is designed for lifting loads. It is intended only as a pulling device and must be used as such with care.**
- WARNING!** Disconnect the straightener from the hydraulic pump before servicing or performing any maintenance on the unit.
- ✓ Maintain straightener in good order. Replace/repair with *genuine parts only. Non genuine parts may be dangerous and will invalidate the warranty.*
- ✓ Use qualified person to lubricate and maintain the hydraulic pump. DO NOT use brake fluid to top up hydraulic unit. Use Sealey hydraulic oil only.
- ✓ Keep the straightener clean for best and safest performance.
- WARNING!** Use straightener on level & solid ground, preferably concrete. *Avoid tarmacadam since the equipment may sink into the surface.*
- ✓ Keep area clean & tidy and free from unrelated materials. Ensure there is adequate lighting.
- WARNING! Ensure you know how much load you are pulling. Never exceed the maximum pulling capacity.**
- ✓ Use in conjunction with Sealey hydraulic pump, chains, hooks, etc only. DO NOT use pumps or accessories other than those supplied with kit, or contact your local agent for details of Sealey hydraulic pumps and pulling accessories. Wrong items may damage unit and void warranty.
- ✓ Ensure there is positive engagement of straightener chains, claws, hooks, links etc to the chassis or vehicle body before pulling.
- ✓ Place tarpaulin or heavy cover over chains to minimise any backlash should chains or accessory fail.
- ✓ Should jacks be employed in the operation, ensure they are of the appropriate type and capacity, are in good condition and that you follow any instructions relating to the jack. Also ensure correct stress supports are used between the jack and jacking surfaces.
- ✓ Maintain correct balance and footing. Ensure the floor is not slippery and wear non slip shoes.
- WARNING! Keep your hands, body and clothing away from the chassis and straightener accessories in use. Take any necessary precautions to protect your personal safety whilst using the straightener.**
- ✓ Ensure the hydraulic hose is not bent or kinked but laid out correctly.
- ✓ Keep non essential persons away from the operating area. Be aware of the location of other persons assisting you.
- ✓ When releasing tension from the load be sure to undo the hydraulic valve VERY slowly.
- x DO NOT operate the straightener if any parts are damaged or missing as this may cause failure or possible personal injury.
- WARNING! DO NOT use straightener as a lifting device of any type. DO NOT use for any purpose other than for which it is designed.**
- x DO NOT pull chains or cables over or around sharp corners.
- x DO NOT heat chains or accessories as this may weaken them.
- x DO NOT bolt links together.

## 2. ASSEMBLY

Unpack the product and check contents. Should there be any damaged or missing parts contact your supplier immediately. Each model should consist of

Chassis frame	1	Chains	2
Hydraulic Pump	1	Chain Hooks	3
Ram	1	Carriage Anchorage Tube	1
Pull Clamps	2	Tube stands	2
Sill clamps	2	Stand/Tube supports	2

Assemble the unit using the parts list as your guide. When connecting the hydraulic pump ensure you retain the dust caps for future use.

## 3. INTRODUCTION

- WARNING!** This product should not be used without a safety cable. In the event of the puller/clamp becoming detached from the vehicle bodywork when under tension a safety cable will minimise the risk of serious injury. Pull Clamp Safety Cable (fig.1), Model Number RE92/SC, is available from your Sealey dealer. After attaching the puller/clamp to the bodywork, but before applying any tension, one end of the safety cable should be clipped to the puller/clamp chain and the other end passed through the bodywork and then also clipped to the chain, as shown in fig. 2.

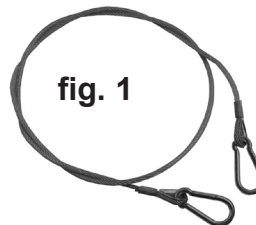


fig. 1

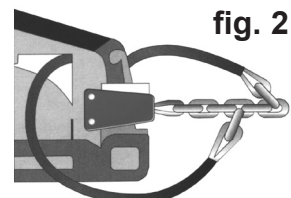


fig. 2

### IMPORTANT:

Only fully trained and qualified persons should use this equipment. These instructions are designed to demonstrate the straightener's potential. The content provides a guide to identifying types of chassis damage, and suggested methods of correction. These instructions are not exhaustive, and are not a substitute for the user receiving full training and supervision under a qualified technician. It is very important that the user understands the applications, limitations, and specific potential hazards of the product.

### VEHICLE DAMAGE INTRODUCTION.

There are two basic vehicle structures, chassis (frame) vehicles, and unitised body vehicles. Chassis repair will consist of, first, straightening the frame, and then the body work. Unitised vehicles do not have a frame, so the whole task is essentially body work. Before using the straightener, you must determine the extent of chassis damage. To do so, the vehicle is usually raised, (subject to it being stable

and safe to do so) for a thorough inspection. The technician will check all parts and determine if there is any broken, torn, crumpled, wrinkled, crushed, twisted or bent metallic parts. If there is, then the chassis may be damaged and require straightening. Measurements should be taken to see how far alignment may be out. It is important to determine correct dimension by referring to the manufacturers frame dimension charts and specifications. Remember, do not commence pulling until you are sure when to stop. Take time to examine and determine damage correctly. Comprehensive planning will save you time when you are actually using this equipment.

**CHASSIS DAMAGE.**

Chassis damaged can usually be grouped into five categories described as follows: SAG, SWAY, KICK-UP, DIAMOND and TWIST. Despite there being many differing designs of frames (i.e. ladder, offset, X-type etc) collision impact will distort the frame or parts of it regardless of construction.

**NOTE:**

A chassis may sustain more than one type of damage i.e. SAG and KICK-UP. In addition to other types of damage some cases of front end damage the cross member or engine mounting may roll under.

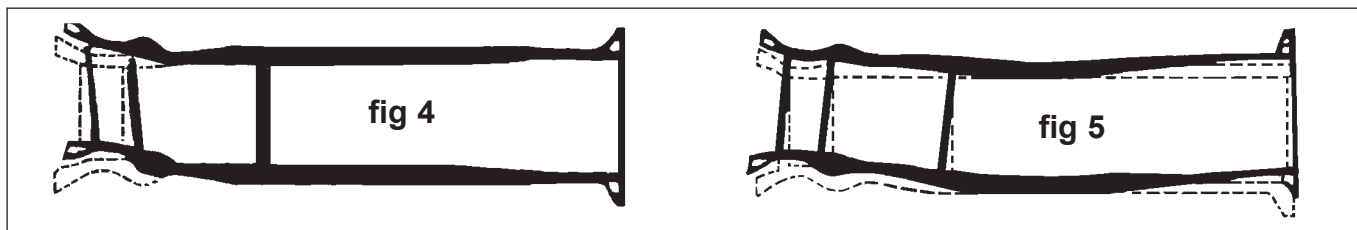
**3.1. CHASSIS SAG**

Vehicle having sustained a front or rear impact. The frame can sag looking like a “hammock” similar to the side view in figure 3.



**3.2. SWAY**

Vehicle sustaining an impact in the side, middle, or, at the end of a side will normally distort resembling a sway as in figures 4 & 5 top views.



**3.3. KICK-UP**

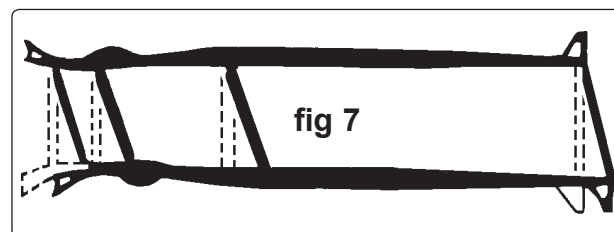
Vehicle bumper impacts will damage only a part of the frame, which will “kick-up as in figure 6 side view. A unitised body is however more likely to SAG, there being one major bend in the floor pan.



**3.4. DIAMOND**

Common in parallel side rail frames, where a corner impact may push the alignment out of square as in the figure 7 top view.

Note: It is un-common for Hour Glass, Unitised, or X-type frames to diamond.



**3.5. TWIST**

Vehicles which suffer an incline impact, such as a ditch or a severe curb impact, may result in the chassis twisting as in figure 8 side view.



**3.6. PREPARING FRAME FOR STRAIGHTENING.**

**WARNING!** Ensure health & safety, local authority, and general workshop practice regulations are adhered to when preparing vehicles.

In principle the straightener is used to exert force in the reverse direction from that of the collision impact. After having determined the extent of damage and taken all measurements, note the direction of the impact, and then plan your pull. In order to gain good access and vision the task will be made easier by removing any interfering parts or sheet metal (i.e. wheels, bumpers, grills etc). Parts that are un-repairable and are to be replaced, must be removed first. In front end damage it may be necessary to remove the upper or lower control arms, sway bars etc, to eliminate excessive spring back.

Where major body damage has been sustained, rough out the body metal first. DO NOT remove body bolts unless absolutely necessary. Accomplish as much body roughing out as you are able while working on the frame. If possible, correct any body damage in unison with frame straightening as this will save time and effort by making it easier to align the body with the frame. The frame and body should always be over corrected to allow for spring-back. Hammering or heating the metal will help relieve body and frame stress and lessen the spring-back.

When there is no clearance between the frame and the body, the vehicle floor may be pried up to allow anchoring of the chain, or an opening made in the floor that can later be welded shut. A preferable method is to weld a tab onto the frame from which pulls can then be made. The tab may later be removed.

When repairs require the additional use of a jack, ensure the jack is of the appropriate type and capacity, is in good condition and that you follow any instructions relating to the jack. Spread jack loads to avoid structural collapse, by using a steel plate between the jack and the car frame. Blocks may be inserted inside “channel-type” frames to prevent the bottom flange from being crushed a wooden block should be placed between the jack and the main beam for stability. DO NOT use if the jack or any jacking point is unstable, and ensure the jack is centred correctly.

## 4. INSTRUCTIONS FOR USE

**WARNING!** Only fully trained and qualified persons should use this equipment. These instructions are not a substitute for the user receiving full supervised training by a qualified technician. It is very important the user understands this products applications, limitations, and specific potential hazards. *Ensure health & safety, local authority, and general workshop practice regulations are adhered to when using this equipment and that you read, understand and apply the safety instructions.*

In all cases, when the final pull is complete, re-check all dimensions to ensure they are equal to the manufacturers specifications.

### 4.1. CHASSIS (FRAME) STRAIGHTENING

To use the hydraulic pump, turn the side valve clockwise to close (fig 9).

To release the hydraulic pressure, slowly turn the valve anti-clockwise.

#### Before first use.

Before using the pump for the first time, purge hydraulic circuit in order to eliminate any possible air that may have accumulated during transit. To do so, connect the pump and ram. Put the pump on a workbench and fully pump out ram. Put ram upside down on the ground, open valve, close ram and pump 8-10 times with the valve open.

#### 4.1.1. SAG

To repair SAG place the main beam of the straightener under the vehicle and chain the frame to the beam. Place a jack between the beam and the frame at the centre of the SAG area and jack upwards while at the same time pulling the frame forward (fig 10).

To avoid irregularities in frame alignment always use a combination of *PUSH AND PULL* when correcting SAG. If both frame rails are sagged, straighten one at a time. Then check with gauges to ensure the frame is in line. If not repeat the operation.

#### 4.1.2. SWAY

##### a) General hook up.

Place the straightener beneath the frame and anchor frame on both sides at points according to figure 11. On vehicles with low rocker panels it may be necessary to place wooden blocks between the chain and the floor panel to protect the body work.

Make the final pull a little beyond centre alignment to allow for spring back in the metal.

##### b) Front & Rear end Sway (fig 12).

Wedge the anchor post against the frame. If there is nothing to anchor against, wrap chain around the frame and the post, (ensuring you follow safety precautions) or weld a temporary steel support to the frame. When the task is complete, remove the steel support.

Should the straightener lift from the floor during pulling, place an appropriate wooden block between the beam and the frame to hold the unit in position.

##### c) "X" or Hourglass frame sway.

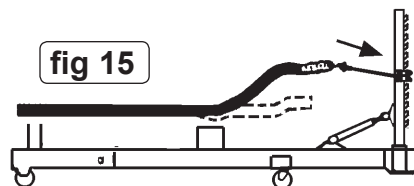
Such frames are usually bent at one end, the central section remaining aligned. Hook up for straightening as in figure 13.

If the vehicle is raised high enough, the chains will slam down and clear the rocker and fender panels. Figure shows only one method of hook up. Various hook ups may be used to suit the particular type of damage.

To avoid stretching the frame to far, It may be appropriate to weld hook-ups and attach an appropriate length of chain between the front and rear of the frame as in figure 14.

#### 4.1.3. KICK-UP (or Roll-Under).

Hook up to the straightener and pull as in figure 15.

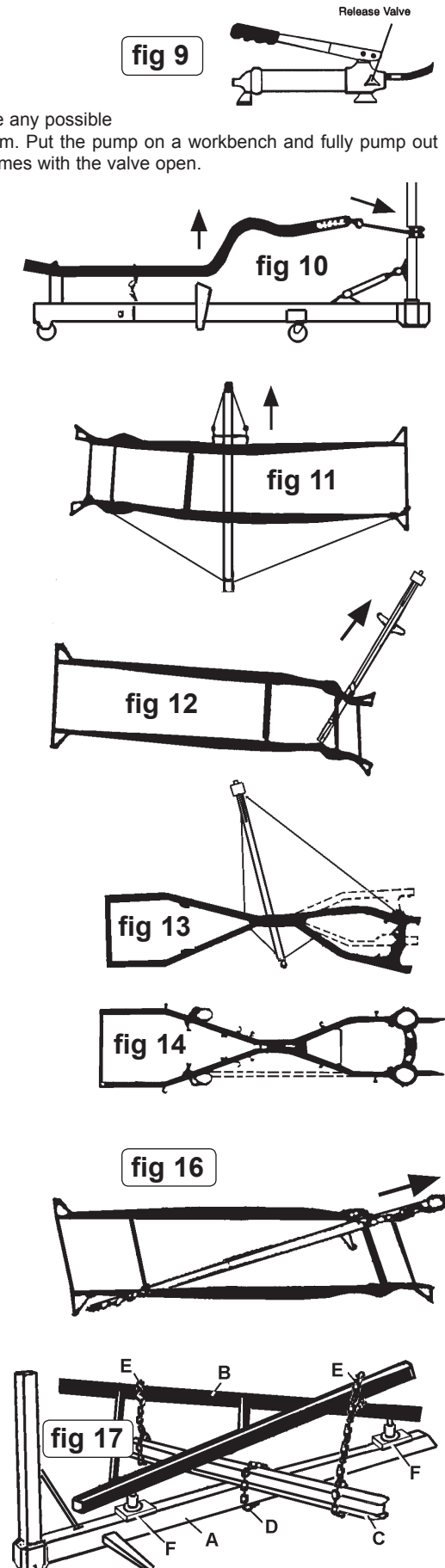


#### 4.1.4. DIAMOND.

Frames can be straightened by using the same general hook-up as for front and rear end SWAY, except that the extension beam is pulled out to make a hook-up as in figure 16.

#### 4.1.5. TWIST.

Ensure any other type of damage is completed before attempting to correct a twist. To repair twist, place the straightener (fig 17.A) diagonally under the frame (B) with an 8' section of heavy I-beam (C) balanced on top of the straightener forming an "X" below the vehicle. Chain the I-beam to the straightener (D) to prevent lifting and slipping. Chain the high points of the frame to the I-beam (E) and place hand jacks on the beam (F). Start to raise one jack a little on one side, then the other side. DO NOT over extend one jack too far beyond the other jack or you may further damage the frame.



#### 4.2. UNITISED BODY WORK

A combination of skills and methods are required to successfully repair unitised bodies. As there is no separation of work into frame repair followed by body repair, the whole task must be planned as one. Although there is no frame to fit the straightener, the unit is designed for the purpose of pulling severely compressed body work where the pulling force must be spread over an area.

Position the straightener accordingly and prepare the body work hook-up points.

Attach chain and with a combination of external pulling, use of heat, hammer and dolly blocks and possibly cutting out buckled sections or reinforcing members commence the pull a little at a time by changing the hook-up point without shifting the setup. Other pulling equipment may be used in conjunction with the straightener to assist by applying two or more forces at the same time slowly working the panel back into place. The equipment may then be maneuvered around the vehicle accordingly.

#### 4.3 USE OF CHAINS SUPPLIED WITH STRAIGHTENER

The straightener is supplied with two identical chains, each having a hook at one end, the other end being plain. To form a loop of chain slide both straight portions of a link into the opening of the hook. The hook will not pass through an individual link. For general pulling purposes a chain will be used in a loop configuration being passed round or through the pulling point on the vehicle and then around the vertical anchor post. Position the chain at the desired height on the anchor post by making sure that it passes between two of the castellations on the back face of the post. The chain is not directly attached to the anchor post but will become secure when tensioned. Prior to making the actual pull gently operate the pump until the chain comes under tension. At this point ensure that the chain is still aligned between a pair of castellations. Contact your local Sealey dealer for details of the full range of pulling accessories.

### 5. MAINTENANCE.

**IMPORTANT:** Only fully qualified personnel should attempt maintenance or repair to the hydraulic system.

#### 5.1. Pump oil level

Release pressure and disconnect the ram from the pump.

Hold pump in an upright position.

Remove filler plug and add hydraulic oil until it is level with the full mark on the pump stem.

- WARNING:** DO NOT use brake fluid, or any fluid other than hydraulic jack fluid as this may cause serious damage to the Jack and will invalidate the warranty! Use only Sealey hydraulic oil.

#### 5.2. General.

Before each use check for broken, cracked, bent, or loose parts, or any visible damage to welds, ram, pump and hose, nuts, bolts, pins, jaws, clamps, beam, stands, chains, hooks and other fasteners. If any suspect item is found remove from service and take necessary action to remedy the problem.

Replace/repair with *genuine parts only*. Non genuine parts may be dangerous and will invalidate the warranty.

Keep all parts of the unit clean, oil wheels every three months.

**IMPORTANT: NO RESPONSIBILITY IS ACCEPTED FOR INCORRECT USE OF THE PUMP.**

Hydraulic products are only repaired by local service agents. We have service/repair agents in all parts of the UK.

**DO NOT RETURN PUMP TO US.** Please telephone us on 01284 757500 to obtain the address and phone number of your local agent.

If product is under guarantee please contact your dealer.

#### De-commissioning Hydraulic Pump

Should the pump become completely unserviceable and require disposal, draw off the oil into an approved container and dispose of the product and the oil according to local regulations.

**NOTE:** It is our policy to continually improve products and as such we reserve the right to alter data, specifications and component parts without prior notice.

**IMPORTANT:** No liability is accepted for incorrect use of this product.

**WARRANTY:** Guarantee is 12 months from purchase date, proof of which will be required for any claim.

**INFORMATION:** For a copy of our latest catalogue and promotions call us on 01284 757525 and leave your full name and address, including postcode.



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